K122584

# 510K SUMMARY

MAR 2 4 2013

*ASSAY ONLY TEMPLATE*

| | | |
|---|---|---|
| **A.** | **510(k) Number** | TBD |
| **B.** | **Purpose for Submission** | New Assay (*ReadiPlasTin only*) |
| **C.** | **Measurand** | Prothrombin Time (PT) and Fibrinogen |
| **D.** | **Type of Test** | Absorbance clot detection |
| **E.** | **Applicant** | Instrumentation Laboratory Co. |
| **F.** | **Proprietary Name** | HemosIL ReadiPlasTin |

**G. Regulatory Information**

| *Product Name* | **HemosIL ReadiPlasTin** | |
|---|---|---|
| *Regulation section:* | 21 CFR 864.7750 | 21CFR 864.7340 |
| *Classification:* | Class II | Class II |
| *Product code:* | GJS | GIS |
| *Common Name* | Prothrombin Time Test | Fibrinogen Test |
| *Classification name:* | Test, Time, Prothrombin | Test, Fibrinogen |
| *Panel:* | Hematology | Hematology |

## H. Intended Use

1. *Intended use(s):*

**HemosIL ReadiPlasTin** is an *in vitro* diagnostic thromboplastin reagent, based on recombinant human tissue factor, for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP Family of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy.

2. *Indication(s) for use:*

Same as intended use(s).

3. *Special conditions for use statement(s):*

For *in-vitro* diagnostic use only. For prescription use.

4. *Special instrument requirements:*

ACL TOP Family analyzers

## I. Device Description

The thromboplastin reagent included in the ReadiPlasTin kit is a liquid liposomal preparation that contains recombinant human tissue factor (RTF) in a synthetic phospholipid blend combined with calcium chloride, buffer and a preservative. In the PT test, the addition of tissue thromboplastin to the patient plasma, in the presence of calcium ions, initiates the activation of the extrinsic pathway. This results in the conversion of fibrinogen to fibrin, with the formation of a solid gel. The fibrinogen is then quantitated by relating the absorbance to a calibrator.

ReadiPlasTin can be used with Il's Normal control, Routine controls 1-3, Low abnormal control, high abnormal control, ISI calibrate and INR validate.

## J. Substantial Equivalence Information:

1. *Predicate device name(s):* HemosIL RecombiPlasTin 2G
2. *Predicate 510(k) #:* K070005
3. *Comparison with predicate:*

*Table of similarities:*

| *Characteristic* | *Predicate* | *Applicant* |
|---|---|---|
| Company | Instrumentation Laboratory (self) | Same |
| Device Name | HemosIL RecombiPlasTin 2G | HemosIL ReadiPlasTin |
| K# | K070005 | TBD |
| Intended Use | HemosIL RecombiPlasTin 2G is a high sensitivity thromboplastin reagent, which is based on recombinant human tissue factor (RTF), for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) on IL Coagulation and ELECTRA Systems and Fibrinogen on IL Coagulation Systems only. The product is used for the evaluation of the extrinsic coagulation pathway, and the monitoring of Oral Anticoagulant Therapy (OAT). | HemosIL ReadiPlasTin is an *in vitro* diagnostic thromboplastin reagent, based on recombinant human tissue factor (RTF), for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP Family of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy. |
| Mode of Operation | *Prothrombin Measurement* In the PT test, the addition of the tissue thromboplastin to the patient sample, in the presence of calcium, initiates the activation of the extrinsic pathway. This results in the conversion of fibrinogen to fibrin, with the formation of a solid gel. | Same |
| | *PT derived Fibrinogen* Fibrinogen is quantitated (PT based method) by relating the absorbance or light scatter during clotting to a calibrator. | Same |
| Sample Type | Citrated Plasma | Same |

*Table of differences*

| *Characteristic* | *Predicate* | *Applicant* |
|---|---|---|
| Device Name | HemosIL RecombiPlasTin 2G | HemosIL ReadiPlasTin |
| Delivery | Lyophilized | Liquid |

## K. Standard/Guidance Document Referenced (if applicable):

No FDA performance standard or FDA guidance has been established.

## L. Test Principle

The thromboplastin reagent included in the ReadiPlasTin kit, after mixing with the ReadiPlasTin Diluent, is a liposomal preparation that contains recombinant human tissue factor (RTF), re-lipidated in a synthetic phospholipid blend.

In the PT test, the addition of the tissue thromboplastin (ReadiPlasTin reagent) to the patient plasma in the presence of calcium ions initiates the activation of the extrinsic pathway. This results ultimately in the conversion of fibrinogen to fibrin, with formation of a solid gel.

The Fibrinogen is quantitated (PT-based method) by relating the absorbance or light-scatter during clotting to a calibrator.

## M. Performance Characteristics

1. *Analytical performance:*

   a. *Precision/Reproducibility*

   Precision and Reproducibility was assessed utilizing 3 lots of reagent on 3 representative members of the ACL TOP Family (2 ACL TOP 700 and an ACL TOP 500 CTS) by 3 independent operators. Precision was evaluated in accordance with CLSI EP05-A2, for 20 days, with 2 runs per day and 2 replicates per run for each sample level (n=80/ instrument/ lot).

   *Prothrombin Time (seconds)*

| System | HemosIL ReadiPlasTin | Mean PT Lot1 | Lot2 | Lot3 |
|---|---|---|---|---|
| ACL TOP Family | Normal Control | 11.4 | 11.7 | 12.1 |
| | Low Abnormal | 21.6 | 21.6 | 22.1 |
| | High Abnormal | 36.2 | 35.5 | 34.8 |

| | Within Run (%CV) | | | Between Run (%CV) | | | Total (%CV) | | |
|---|---|---|---|---|---|---|---|---|---|
| Controls | Lot1 | Lot2 | Lot3 | Lot1 | Lot2 | Lot3 | Lot1 | Lot2 | Lot3 |
| Normal | 0.6 | 0.6 | 0.6 | 0.1 | 0.1 | 0.1 | 1.2 | 1.4 | 1.1 |
| Low Abnormal | 0.7 | 0.6 | 1.1 | 0.6 | 0.3 | 0.0 | 2.9 | 1.5 | 1.2 |
| High Abnormal | 0.5 | 0.7 | 0.9 | 0.5 | 0.6 | 0.3 | 1.7 | 1.9 | 1.4 |

*Fibrinogen (mg/dL)*

| System | Controls | Mean Fibrinogen Lot 1 | Lot2 | Lot3 |
|---|---|---|---|---|
| ACL TOP Family | Normal | 297.5 | 284.6 | 287.9 |
| | Low Abnormal. | 121.8 | 114.9 | 117.2 |
| | Low Fibrinogen | 135.4 | 135.7 | 135.8 |

| | Within Run (%CV) | | | Between Run (%CV) | | | Total (%CV) | | |
|---|---|---|---|---|---|---|---|---|---|
| Controls | Lot1 | Lot2 | Lot3 | Lot1 | Lot2 | Lot3 | Lot1 | Lot2 | Lot3 |
| Normal | 1.2 | 1.1 | 1.2 | 1.8 | 1.4 | 1.4 | 2.2 | 2.0 | 2.0 |
| Low Abnormal | 1.5 | 1.8 | 1.4 | 1.6 | 1.3 | 1.0 | 2.2 | 2.4 | 1.8 |
| Low Fibrinogen | 2.9 | 3.2 | 3.4 | 0.0 | 0.0 | 0.0 | 3.1 | 3.5 | 3.5 |

b. *Linearity/assay reportable range:*

Fibrinogen:

A fibrinogen linearity study was performed in accordance with CLSI EP6-A. Results met the acceptance criteria of r≥0.95, supporting the device's insert claim of a Fibrinogen Analytical Range of 60-700mg/dL.

c. *Traceability, Stability, Expected values (controls, calibrators, or methods):*

Traceability

Each batch of ReadiPlasTin reagent is calibrated against an ISI certified House Standard which in turn is calibrated against the corresponding international reference preparation according to the WHO recommendations.

The reported INR Reference values were determined over multiple runs on IL coagulation systems running a specific lots of PT reagent against a House Standard ISI Calibrate, which is traceable to the current WHO International Standard identified in the INR Reference table of the product insert and consensus values from > 200 laboratories.

Stability

Unopened reagent and diluent are stable until the expiration date shown on the vial, when stored at 2-8°C. Once prepared for use, the reagent is stable for 10 days at 2-8°C in closed original vial, or for 10 days at 15°C on the ACL TOP Family in the original vial with no stirring. For optimal stability remove the reagent from the system and store it closed at 2-8°C in the original vial. Do not freeze.

d. *Detection limit:*

Extrinsic Factor Linearity:

Extrinsic factor linearity studies were performed on factors II, V, VII and X. Results met the acceptance criteria at r≥0.95.

e. *Analytical Specificity:*

Testing for interfering substances was performed according to CLSI EP7-A. The assay was insensitive to Heparin, Hemoglobin, Triglycerides, and Bilirubin up to the following levels:

| | Heparin | | | | |
|---|---|---|---|---|---|
| Parameter | UFH | LMW | Hemoglobin | Triglycerides | Bilirubin |
| PT (sec) | 1.0 IU/mL | 1.4 IU/mL | 500 mg/dL | 1000 mg/dL | 50 mg/dL |
| Fibrinogen | 1.5 IU/mL | 1.7 IU/mL | 500 mg/dL | 600 mg/dL | 50 mg/dL |

*f. Assay cut-off:*
Not Applicable

2. *Comparison studies:*

*a. Method Comparison with predicate device:*

An in-house method comparison was performed in accordance with EP09-A2 on 100+ samples (Normal & Abnormal), comparing HemosIL ReadiPlasTin on representative members of the ACL TOP Family (ACL TOP 700 & ACL TOP 500 CTS), against HemosIL RecombiPlasTin 2G, with the following result(s)[10]:

| Assay | Instrument | n | Slope (95% CI) | Intercept (95% CI) | r |
|---|---|---|---|---|---|
| PT(sec) | ACL TOP | 230 | 0.913 (0.907-0.919) | 0.948 (0.835-1.062) | 0.9989 |
| PT (INR) | 700 | 65 | 0.979 (0.961-0.996) | 0.026 (-0.020-0.072) | 0.9975 |
| Fibrinogen | | 241 | 0.946 (0.935-0.958) | -4.3 (-9.1-0.5) | 0.9955 |
| PT(sec) | ACL | 238 | 0.903 (0.896-0.910) | 1.091(0.945-1.236) | 0.9981 |
| PT (INR) | TOP 500 | 65 | 0.937 (0.914-0.959) | 0.016 (0.100-0.232) | 0.9955 |
| Fibrinogen | CTS | 242 | 0.975 (0.962-0.988) | -7.6 (-12.9- -2.2) | 0.9945 |

In US field studies, the following data were obtained using a specific lot of ReadiPlasTin on the ACL TOP:

| Parameter | Site | n | Slope (95% CI) | Intercept (95% CI) | r |
|---|---|---|---|---|---|
| PT(sec) | Site 1 | 254 | 0.909 (0.900-0.918) | 0.45 (0.24-0.66) | 0.9966 |
| | Site 2 | 312 | 0.970 (0.962-0.978) | 0.51 (0.34-0.68) | 0.9972 |
| | Site 3 | 135 | 0.889 (0.874-0.903) | 1.76 (1.40-2.12) | 0.9955 |
| PT (INR) | Site 1 | 76 | 0.938 (0.916-0.961) | 0.138 (0.079-0.197) | 0.9947 |
| | Site 2 | 89 | 0.928 (0.892-0.963) | 0.119 (0.033-0.205) | 0.9838 |
| | Site 3 | 71 | 0.914 (0.891-0.937) | 0.120 (0.060-0.181) | 0.9945 |
| Fibrinogen | Site 1 | 237 | 0.947 (0.936-0.957) | 4.5 (-0.3-9.3) | 0.9964 |
| | Site 2 | 284 | 0.971(0.961-0.982) | 0.56 (-4.4-5.5) | 0.9956 |
| | Site 3 | 129 | 0.998 (0.978-1.019) | -4.2 (-13.6 to 5.2) | 0.9931 |

*b. Matrix comparison:*

A fresh versus frozen sample study was performed (n=245) on both normal (n=140) and abnormal (n=105) patient samples. The results demonstrated comparable performance on fresh and once-thawed samples.

3. *Clinical studies:*

*a. Clinical Sensitivity:* NA
*b. Clinical Specificity:* NA
*c. Other clinical supportive data (when a. and b. are not applicable):* NA

4. *Clinical cut-off:* NA

5. *Expected values/Reference range*:*

A normal range study (n=199), was performed in accordance with CLSI C28-A3, testing healthy subjects who were not coagulated, with ReadiPlasTin reagent, on a representative member of the ACL TOP Family (ACL TOP 700). The reference range was established as:

| | *NR Reference Interval** | |
|---|---|---|
| Assay | Lower Limit (95% CI) | Upper Limit (95% CI) |
| PT (sec) | 10.2 (9.7-10.4) | 12.9 (12.7-14.1) |
| Fibrinogen (mg/dL) | 282 (274-332) | 553 (531-562) |

*These results were obtained using a specific lot of reagent. Due to many variables which may affect clotting times, each laboratory should verify its own normal range.

## N. Proposed Labeling

The labeling is sufficient and satisfies the requirements of 21 CFR Part 809.10.

## O. Conclusion

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.

## P. Administrative Information

*Applicant Contact Information*


| | |
|---|---|
| *Name of applicant:* | Instrumentation Laboratory Co. |
| *Mailing address:* | 180 Hartwell Road<br>Bedford, MA 01730, USA |
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| *Contact:* | Jacqueline Emery, BSEE<br>Regulatory Affairs Manager |
| *Date Prepared* | August 21, 2012 |

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center – WO66-G609
Silver Spring, MD 20993-0002

March 24, 2013

Instrumentation Laboratory Co.
c/o Ms. Jacqueline Emery
Regulatory Affairs Manager
180 Hartwell Road
Bedford, MA 01730

Re: k122584
Trade/Device Name: HemosIL® ReadiPlasTin
Regulation Number: 21 CFR § 864.7750
Regulation Name: Prothrombin time test
Regulatory Class: Class II
Product Code: GJS, GIS
Dated: March 15, 2013
Received: March 18, 2013

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you; however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set

forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please go to http://www.fda.gov/AboutFDA/CentersOffices/CDRH/CDRHOffices/ucm115809.htm for the Center for Devices and Radiological Health's (CDRH's) Office of Compliance. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely yours,

Leonthena R. Carrington -S

for Maria Chan, Ph.D.
Director
Division of Immunology and Hematology Devices
Office of *In Vitro* Diagnostics and Radiological Health
Center for Devices and Radiological Health

Enclosure

# Indications for Use Statement

**510(k) Number (if known):** K122584

**Device Name:** **HemosIL® ReadiPlasTin**

**Indications for Use:**

**HemosIL ReadiPlasTin** is an *in vitro* diagnostic thromboplastin reagent, based on recombinant human tissue factor, for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP® Family of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy.

Prescription Use ✓ AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 801 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Leonthena R. Carrington -S

Division Sign-Off
Office of In Vitro Diagnostic Device
Evaluation and Safety

510(k) K122584